

**ABSTRACT OF THE DISCLOSURE**

5 An advanced control system for a photolithography tool that receives measurement data relating to inline parameters varying with position on a substrate surface. The position sensitive measurement data is used to establish a position dependent target offset for an exposure map, thereby effectively compensating for substrate non-uniformities. Since the inline measurement data is available significantly earlier in comparison to electrical measurement data of a completed circuit element, a more accurate exposure map may be obtained taking into account the process history of the substrates.